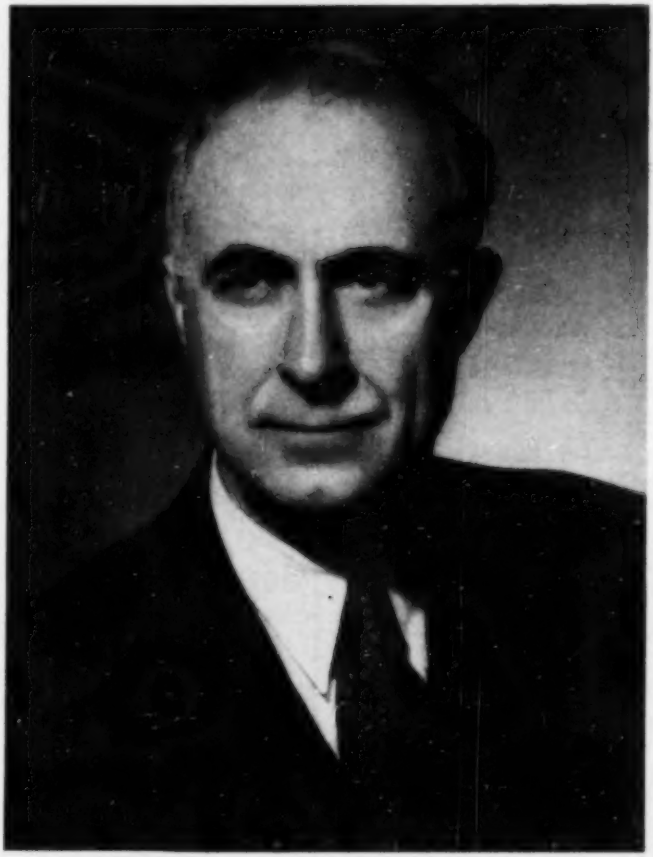
THE CHEMIST

OCTOBER 1950 VOLUME XXVII No. 10



DR. EMMETT B. CARMICHAEL, F.A.I.C.

Organizer of Alabama Chapter

(See page 381)

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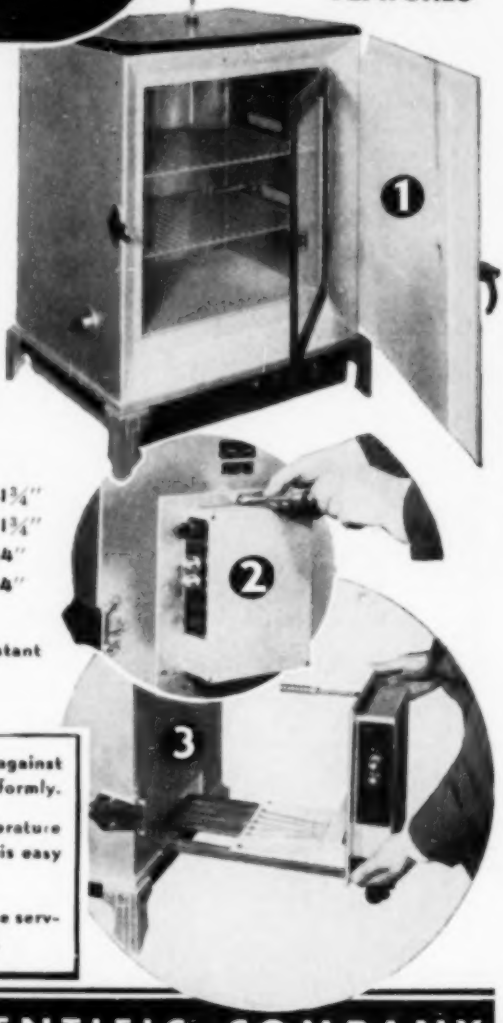

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SCHEDULED FOR EARLY ISSUES

Chemists Over Forty-five, by Herbert F. Schwarz, F.A.I.C.
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The Increasing Responsibilities of the Chemist, by Ralph Lamenzo, F.A.I.C.
The Chemist Should Not Be An Introvert, by Kenneth C. Longman, MAIC
Employment Project News

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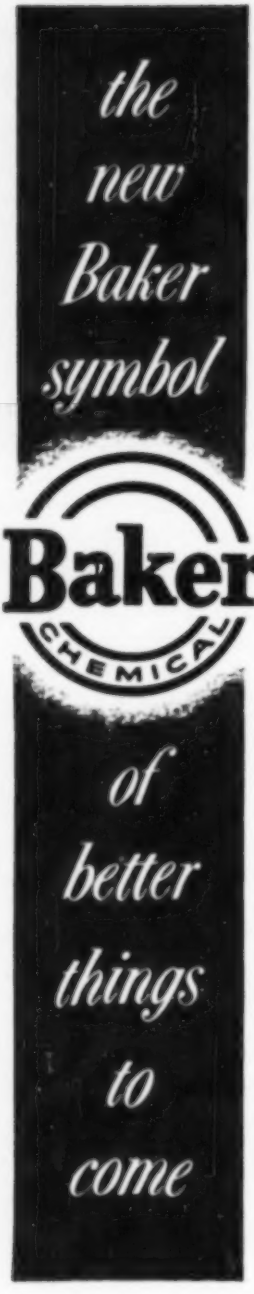
Cover Picture

Emmett B. Carmichael, F.A.I.C., professor and head of the Biochemistry Department, Medical College and School of Dentistry, University of Alabama, Birmingham, has been instrumental in bringing about the organization of the Alabama Chapter of THE AMERICAN INSTITUTE OF CHEMISTS.

Dr. Carmichael received the A.B. and M.S. degrees from the University of Colorado, where he served as instructor in organic chemistry for five years. Then he accepted an instructorship in biochemistry at the University of Cincinnati where he received the Ph.D. degree in 1927. That fall, he joined the faculty of the School of Medicine, University of Alabama, as an assistant professor, being elevated to the rank of professor in 1932. When the four-year Medical College was organized in 1945 in Birmingham, he moved to the new location where he has assembled a strong biochemistry staff.

Active for many years in scientific, honorary, and professional societies, Dr. Carmichael was elected president of the Alabama Academy of Science in 1930 and served as councilor of the Academy to the American Association for the Advancement of Science for four years, serving as chairman of the Academy Conference in 1933. He was chairman of theAlabama Section of the American Chemical Society, 1934-35. He served as national president of Alpha Epsilon Delta, honorary premedical society, 1932-1938. When Sigma Xi established a chapter at the University of Alabama in 1939, he was honored by being elected first president of the chapter. He is national president-elect of Phi Beta Pi, professional medical fraternity. He is also a member of the American Society of Biological Chemists, the American Physiological Society, the Society for Experimental Biology and Medicine, the Association for the Study of Internal Secretions, and a fellow of the International College of Anesthetists.

Dr. Carmichael has edited the *Scalpel* of Alpha Epsilon Delta and the *Journal of the Alabama Academy of Science*. He has written a number of articles on various phases of experimental medicine. One of his hobbies is writing biographies of medical men.



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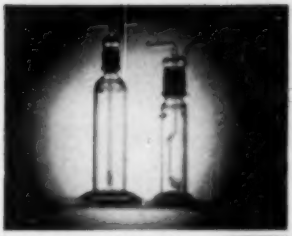

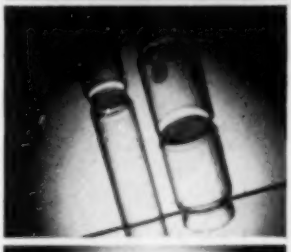

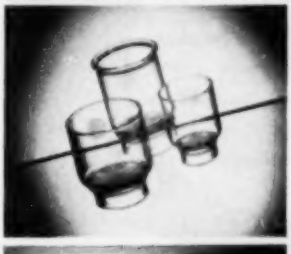

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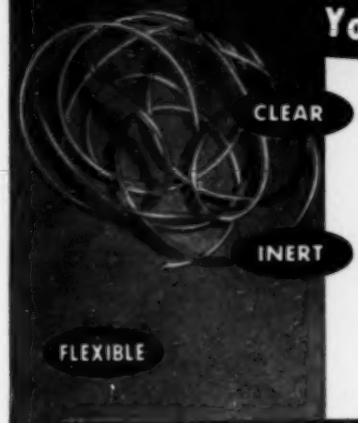

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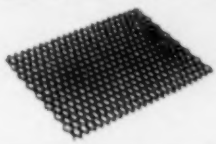

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EDITORIAL

New Chemicals—Transition From Research to Production

Frank E. Maple, F.A.I.C.

Commercial Solvents Corp., 17 East 42nd St., New York 12, N.Y.

WE ALL recognize fully the necessity for maintaining a steady flow of new products to the commercial stage to insure the steady growth of a chemical company. Much has been written regarding the necessity for an adequate research program to maintain a backlog of new chemicals which will provide insurance for profits in the future. In fact, during the past twenty years this necessity has been so well sold to the chemical and allied industries that practically all have some sort of program and the great majority have well-rounded research activities.

Furthermore, during the past ten years or so, more and more chemical companies have recognized the necessity for market development work by trained and experienced technical men. The new chemicals developed by research must be systematically introduced to potential users by specialists in the field who preferably have had both research and production experience, but whose primary interest is in "selling" the properties and potential usefulness of new chemicals to those who can use them. The growth of this essential activity can be judged from the growing literature on the subject and from the rapid increase of interest in the Commercial Chemical Development Association.

Obviously there are other essential factors in nursing a new chemical to the commercial stage. I have seen only passing references to these other factors, and some may consider them routine.

The most important requirement of all in maintaining a steady flow of new chemicals is good management. This is so obvious that it is very easy to neglect to define good management properly and thus neglect a development program unintentionally.

To provide efficient management which will derive greatest benefit from a development program, it is necessary to enforce continuous watchfulness over new products at every stage from research inception to commercial production and sale. This function can best be performed by a top-level executive. Only a responsible management official can see a new product safely through the difficult transition from research to

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production. The job has been done by the research director in some instances, by the development director in other instances, and by the general manager or sales manager in still others.

In all cases, however, regardless of title, the overseer has really functioned as a sort of general manager. His supervision must extend over research, development — both production and sales—and actual sales of the commercial product. If these responsibilities are divided, the new product is slowed immeasurably in the transition stage. This is bound to happen because of the impracticality of drawing definite dividing lines between research, development, and commercial production and sale.

Therefore it can only be concluded that one man must have the direct overall responsibility for new products at all stages of development. It must be his duty to:

1. Supervise the choice of research projects and the emphasis placed on each one.
2. Decide from the available information which products are worth developing.
3. Direct the development of a process on semi-commercial scale, and the sampling and market development work.
4. Decide when a product is ready for commercial production and sale.

In some organizations this "superman" is the director or vice president in charge of development. In others he may be the sales manager. In any case he must in fact carry full responsibility for the products he makes and sells at all stages of development.

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Determination of Wages for Chemical Engineers and Chemists

Dr. Robert S. Aries, F.A.I.C. and William Copulsky

R. S. Aries & Associates, 400 Madison Ave., New York, N.Y.

AFTER the relative abundance of the war years, the convictions that openings are "too few" and wages "too low" are once again spreading among chemists and chemical engineers, both recent graduates and others in the job market. Less than a dozen years ago, recent graduates were starting at $125 per month. Today, there are applicants for positions paying as low as $150 per month, especially in metropolitan areas.

It is, therefore, important for the chemist or chemical engineer to appreciate and realize the processes of his economic environment that determine wage levels. By this understanding, he will be able to appreciate and attempt to better his position.

Wage Determinants

While numerous articles have been written which are concerned with statistical studies of wages and salaries, they have contributed little to an understanding of the economic processes involved. The main drawback of such studies is that they in all cases deal primarily with *money* income, while as we shall show, both employer and employee in the process of wage determination are considering what might be called a *total* wage which represents the sum of money and intangible *psychic* income, both to employer and employee.

For example, a recent survey conducted by us among a representative group of young chemical engineers shows that they rate several job factors considerably above salary in evaluating a position. These factors include chance of promotion, satisfaction from job, a chance to use one's own ideas, and security. As shown in Table I, all of these factors represent income, not money income it is true, but an income that is just as real in the mind of the employee as money. Moreover, we know that employers in the same manner consider factors, such as personality, to be more important than the wage demands of the employee.

The young chemist or chemical engineer frequently feels that he is being underpaid when he compares his money income to that of the common laborer, the secretary, or the janitor. This dissatisfaction results from a failure to compare *true* income rather than money income. If

these views are left unchallenged, they lead to a desire for non-economic control of wage rates through unionization, government control, or similar methods which interfere with the workings of free markets. While such non-economic solutions may be necessary if the mechanism of free markets is distorted or broken down, they are not preferable unless we believe that we must return to the medieval concept of the "just" wage and overlook the determination of economic status by ability, energy, and determination.

Table I
Ratings Given Various Incentives by Groups of Respondents

	Group		
Incentive	*All Engineers*	*Civil Engineers*	*Chemical Engineers*
Chance of Promotion	82%	79%	86%
Satisfaction from job	77	78	76
Chance to Use Own Ideas	67	64	70
Security	58	57	59
High Pay	57	56	56
Good Boss	44	43	45
Short Hours	27	31	23
Pensions, Insurance	24	28	20
Chance to be of Public Service	13	13	14

Source: Survey by R. S. Aries & Associates, 1950.

Wage Determination in the Free Market

Without delving too deeply into the theory involved, let us briefly consider how the wage is determined by employer and employee. We know that the prospective employer and employee both have a wage or a wage range in mind when they open discussions, which may or may not be modified by the job interview. We speak here not of money wages but of the total income or payment, both real and intangible. Therefore, when the demand of the employee is equated by the offer of the employer, hiring takes place. It will be seen that the real process of wage determination takes place not at this point, but in the determination of the wage range in the mind of the prospective employer and employee.

A survey conducted by R. S. Aries & Associates discloses that young chemical and other engineers prefer opportunity for promotion, job satisfaction, and a chance to use their own ideas to more measurable factors such as salary and hours. Table I, summarizing the results of this survey discloses that a chance for promotion is considered one and one-half times as good as high pay, and three times as good as short hours in rating the attractiveness of a position. This survey of a representative sample was conducted by the paired comparison method in which each of nine incentives was compared by the respondent with each other incentive. The figures shown in Table I represent the percentage of time that the particular incentive was selected out of the total number of times that it could have been selected by the respondents, and represents a rating given to the incentive in comparison

with the others listed, by the respondents as a group. Engineers responding to this survey had from one to five years of experience in the field.

In view of the results of this survey, we are in a better position to evaluate the various factors which result in the determination of the expected total wage of the prospective employee. These factors are briefly:

1. The self-valuation of his services based on his entirely subjective opinion of his worth, his former salary and similar factors.

2. The will to offer those services based on many intangible factors, such as effect on social status, family training, and mental attitude as conditioned by home, school, and previous job environments.

3. The judgment of the position of the employer—that is every employee will attempt to obtain a wage conditioned by his opinion of "what the traffic will bear."

4. The judgment of the position relative to other job-seekers based on what wage he feels that they would seek, since he is in competition with them for the position.

5. The cost to the employee of taking the job as balanced by the income received. The cost is both real (transportation costs) and psychic (boredom).

6. The power of the employee to withstand prolonged unemployment based on his savings, expenses, and psychological factors.

A great deal of explanation can be attached to each of these factors, but that is beyond the scope of this paper. The aim of listing these wage determinants is to point out the fact that the *money* wage is only a part of the income of the employee, and all of the other psychological and subjective factors must also be taken into consideration.

It becomes easier to understand the forces of supply and demand on wage determination, the effect of the business cycle, etc., by relating each of these effects through one or more of the wage determinants.

Then how can we equate the *money* and *psychic* income so that we can reduce them to common terms for comparative purposes. We believe that *money* costs can be reduced to subjective terms through the fifth factor—the cost to the employee of taking the job. For the lower the money payment received, the greater must be the sacrifice of the employee in giving up goods and services that could be bought with the greater income. Therefore, each employee in setting up his demanded wage rate consciously or unconsciously must estimate subjectively the value to him of this abstinence in considering the money payment received in salary.

It becomes obvious that the chemist or chemical engineer cannot receive a lower *total* income than the common laborer or the secretary—for if he were to, he would attempt to ad-

just his position accordingly. That is if the sum of his money income and his psychic income were not greater than his money income and *negative psychic* income from the job of the common laborer, he would then attempt to adjust.

The Employer

In the same manner the employer builds up a concept of offered wage. What essentially is this offered wage? The employer must feel that the employee will produce more than what he receives. This concept of what the employee will produce and what he receives is again subjective, and can not be entirely reduced to *money* wages alone. The determinants parallel the determinants of the employee:

1. His subjective valuation of the value of the employee in terms of the value of his present and past employees and other goods or services which he might purchase.

2. His will to offer the job based on his environmental influences. In this respect, blind race or religious prejudice may outweigh purely economic factors.

3. His subjective opinion of the worth of the money he pays, depending on his cash reserves, other personnel and equipment needs, etc. This factor is related to the power of the employee to withstand prolonged unemployment as it relates to the power of the employer to withstand lack of a person to fill the job.

4. His judgment of the power of the prospect to withstand unemployment.

5. His judgment of his offer in relation to offers of competitive firms to the prospect.

Thus the employer's concept of what wage to offer is conditioned by his opinion of the production of the employee, (or in cases of new graduates, their potential production) as opposed to his *total* payment to the employee. This total payment to the employee is the *money* payment, plus or minus the gain or loss on the part of the employee because of the personality of the employee, the intelligence of the employee, the initiative, energy, and determination of the employee, and many other such factors. In no case can this *total* payment be greater than the total production of the employee. How much less it will be, depends upon the other determinants listed.

Wage Adjustment

As the value of the employee to the employer increases, all other factors being equal, his wage should rise accordingly. But suppose the value of the employee decreases. Many considerations, most of them subjective and psychological prevent the employee from accepting a lower wage. In this case unfortunately, the only recourse of the employer is to discharge the employee and rehire a substitute at another wage level. This accounts for high turnover in such

positions during business downturns, when the employer's concept of the value of the employee is changed by changing ideas of the value of money and changing judgment of the supply and demand conditions of the labor market.

Can the Employee Increase His Value?

There are several non-economic solutions of increasing the income of chemists and chemical engineers. By a non-economic solution we refer to a solution in which some outside agency fixes either supply and demand or wages. In any case the fixing of any one of these factors limits the others automatically. For example, the setting of a minimum wage for chemists and chemical engineers will mean that less chemists and chemical engineers will be hired because there will be less chemists and chemical engineers available who will be capable of producing more than what they receive. Such non-economic solutions include unionization, state licensing, government regulation, or control by professional societies and schools(as is done by the American Medical Association).

Non-economic solutions cannot be avoided when the function of the free market breaks down. For example, if unionization in other fields progresses to the point where other workers and professionals receive a more than proportionate share of income, this additional income can only come from the non-unionized fields or profits and in this case unless employers compensate accordingly, chemists and chemical engineers will be forced in self-defense to organize or to leave the fields, thus decreasing supply and raising wages accordingly.

In any case, the non-economic solution always prohibits or limits the free choice of both the employee and the employer, but should the defects or inequalities of our system become so great as to outweight the desire for democratic free choice on the part of the people involved, there is recourse to such arbitrary solutions.

While these solutions relate to the salaries of chemists and chemical engineers as an integral group, they bear no relation to the earning power of the individual chemist or chemical engineer.

We can compare our present system to a foot race. We provide each runner with the same facilities, we attempt to equalize their inequalities, and we attempt to fairly referee the running. But we give the cup to the winner—we do not attempt to make all the runners finish together. To a great extent therefore, the earnings of the chemist or chemical engineer depends on his own ability, energy and determination. His *money* wages depend on his willingness to sacrifice psychic income. The man who is interested in following his own research ideas regardless of potential profit will earn less *money* wages than

the man who thinks in terms of the profit of his employer (recognizing the fact that by doing so he sacrifices the primary consideration of self-interest). But their *total* income will be equal, all other factors considered.

The individual can also attempt to better his position by directing his interests into fields where supply is least and demand greatest. At present a shift of emphasis from pure research to commercial development is recognized. There may appear to be a general glut of the supply of chemists and chemical engineers and yet all employers often have a hard time in filling a specific opening.

Conclusions

We feel then that considerations of money and psychic income as total income will give the chemist or chemical engineer and the employer a better understanding of wage determination and especially the relation of his wages to the wages of others in the same or different fields. Moreover, there should be a realization that non-economic fixing of wages and salaries must result in decreased opportunities for employment. The authors do not attempt to evaluate the morality of unionization, wage-laws, or arbitrary regulation. But it is desirable to point out that these can only be obtained at the sacrifice of free democratic choice. Perhaps this sacrifice is best summarized by a little notice that appears at the top of the "Situations Vacant" column of *The Chemical Age*, a British publication, which reads as follows:

"None of the vacancies in these columns relates to a man between the ages of 18 and 50 inclusive, or a woman between the ages of 18 and 40 inclusive, unless he or she is exempted from the provisions of the Control of Engagement Order, or the vacancy is for employment exempted from the provisions of that order."

Silver Anniversary

The Buffalo Electro-Chemical Company, Inc., is celebrating its Silver Anniversary. One of the first manufacturers to make hydrogen peroxide electrolytically, it now produces hydrogen peroxide over a range of concentrations including 90 per cent hydrogen peroxide, as well as peracetic acid, persulfates, and other peroxygen compounds. C. A. Buerk, founder of the company, has been president since its incorporation in 1925. Dr. H. O. Kauffmann, F.A.I.C., is in charge of research.

New Address

Alan Porter Lee, Inc., engineers in designing equipment and complete plants for processing fats, oils, fatty acids, glycerine, and soap, have moved their offices from 150 Broadway, New York, N.Y., to 81 Miller Road, Morristown, New Jersey.

Employment Contracts

John A. Dienner, F.A.I.C.

Brown, Jackson, Boettcher & Dienner, Chicago, Illinois

(Presented at a recent meeting of the Chicago Chapter, AIC.)

I.

The objective of the Patent System is (a) To get new devices, methods and products into the hands of the people (b) by inducing someone to go into the business of doing so (c) through the offer of an exclusive market (d) in anything novel, inventive and useful (e) in the fields of art, machine, manufacture or composition of matter (f) and with the provision that the original inventor sign the request for the grant of the protected market, i.e., the patent.

As this objective is attained, we have progress of science and the useful arts, and the standard of living is raised.

II.

To bring about an advance in the useful arts and a rise in the standard of living in respect of any particular development, requires the following:

(1) Recognition of a want or problem, and the solution thereof by a definite mental concept of means operating in a certain manner to perform a desired function or produce a desired result. The concept is that of a new device, method or product.

(2) Design of the device in a form such as to embody the best available technology and in a form most useful to the people consistent with a cost which will make it widely available.

(3) Production of the said means in quantity and at a cost to make it available to as wide a market as possible.

(4) Marketing of the new device, method or product to the people in a manner to teach them its use and value and at a cost that the people can afford.

(5) Management must coordinate the above activities on such a basis that the enterprise is self-supporting, and can win its way in competition.

Design, production and marketing are closely tied together from the standpoint of usefulness, cost and availability to the people. The general procedure of design, production and marketing is much the same for any new product, and requires an integrated organization large enough and with sufficient capital available to supply the device to the people in the quantities that the people require.

III.

In a successful enterprise of supplying a new device to the public,

the distribution of man power may be somewhat as follows:

Where 200 to 500 men distribute, sell and service
100 to 200 men will produce
5 to 10 men will design and engineer
1 to 2 men will invent
5 to 10 men will manage and supervise.

Now without progress in useful arts, a competitive economic system will quickly gel, rigidify and expire. Progress is therefore immensely important. But progress involves invention and discovery and that arises only in the brain of an individual.

The Patent law offers to the inventor a protected market for the invention. That is essentially an opportunity for a business man. In modern technology, the inventor, even if his contribution comes into the particular art from outside the same, rarely has the capital or the organization to design, engineer, produce and market the invention. In brief, the inventor as such is in no position to take advantage of the thing which the patent offers, namely, a business opportunity. Generally, he must call upon others to set up such an organization, or he must go to an organization already established and place his invention in the hands of the organization that has the capital, manpower, facilities and management.

From its earliest days, the U.S. patent law had recognized that the inventor, though he is at the root of progress, is rarely able to get the invention into the hands of the people, and thereby actually effect progress. Hence, the U.S. law has, from its beginning, provided that the patent shall be assignable, either in whole or in part, or it may be sub-divided into territorial grants, or it may be licensed to one, or to many. This provision of the law arose from the experience of over three centuries.

In modern industrial enterprise, all of the necessary functions of sales, production, engineering and invention are integrated under a common management. Hence, invention is now just as much a function within the organization as any of the other activities.

The inventor, although exceptional in mental characteristics is just as much a limb of the organization as is the sales force or the management or the engineers or the production force. He learns of the problems of the industry through being a part of the organization. He uses the facilities of the organization to do his work, and he is paid for his services by a continuous salary.

That he is a rare individual is obvious from the above figures. The problem of management is to find from 200 to 500 salesmen, 100 to 200 production men, 5 to 10 engineers, 5 to 10 good executives and supervisors, and against all of those,

to find one or two men who will maintain progress of the organization in industry.

The importance of the inventors is out of all proportion to their numbers. That is true of all industry.

Employment contracts under those circumstances are essential. Every good lawyer can examine the cases and advise you what provisions should be contained, such as:

1. All engineering and research employees should be put under contract to assign inventions and discoveries. The law and public opinion sanction this.

2. The scope of invention and discovery to be assigned should be confined to those that relate to the business of the Company, present or contemplated by the management, and to all inventions and discoveries relating to problems assigned by management.

3. The term of employment and the salary should be definitely stated.

4. No unreasonable provision which would interfere with subsequent employment or conflict with obligations under previous employment should be included because such are against public policy and will not be sustained by the Courts.

VI.

But there are other factors to be considered in the relation of the organization to its inventors, which factors arise primarily out of the high concentration in a few persons of an essential function, namely, the maintenance of progress of the enterprise in the face of competition. These factors are largely psychological, and psychological treatment is required.

The following are suggested:

1. The importance of the function performed by this group must be constantly recognized, and the members of the group should have public and private recognition and honors wherever possible. This works two ways. It fulfills the psychological cravings for recognition of the unique character of the individuals and it serves as a stimulus for successful performance. Witness the "House of Magic."

2. Pay them well.

3. At the end of a fixed period, say five years, after each patent is issued to any one of them, whether they are still in the employ of the Company or not, review the situation, and if the patent is in use by the Company, the patentee and his immediate helpers in the particular development should receive a bonus.

VII.

In a strongly competitive enterprise, pure research is an unjustifiable luxury. If your enterprise becomes sufficiently strong that it is a leader in its field, and is willing to carry the burden of leadership, pure research is an appropriate activity and approaches an obligation residing in leadership.

Pure research is essentially a scholastic activity, and can best be carried on in a University atmosphere. If you wish to conduct pure research, either have it done at a University, or if you wish to conduct it on your own premises, have the head of that branch of research conduct a school within the company.

VIII.

The Patent System is an incentive system directed essentially to the making and supplying of new devices to the public. It operates primarily on business men, and secondarily, on inventors. Inventions which cannot be made the basis of manufacture and sale to the people are generally regarded as of little consequence, and industry pays them but little attention. Inventions which fail to reach the market stage are of little consequence in the promotion of progress of science and useful arts. Inventors must guide themselves accordingly.

Royer Receives Olney Medal

Dr. George L. Royer, F.A.I.C., assistant director of application research, Physical Chemical Research Section, Calco Chemical Division of American Cyanamid Company, was awarded the Olney Medal of the American Association of Textile Chemists and Colorists, at its 29th Annual Convention held September 30th, at Wentworth - by - the - Sea, Portsmouth, New Hampshire. The Olney Award Medal is presented annually for outstanding achievement in the field of textile chemistry, including the development of chemical agents or chemical processes used in the manufacture of textiles or methods for their evaluation. Dr. Royer's medal acceptance address was entitled, "The Scientific Approach to the Study of the Coloring and Finishing of Textiles."

Dr. Royer received the Ph.D. degree from Cornell University in 1932 and immediately joined the Calco Chemical Division of American Cyanamid as a microscopist in the Research Laboratory. In 1935, he was transferred to the Analytical Department to establish a micro-chemical laboratory. Five papers were published in this field with his various co-workers on special apparatus designed for automatic combustion of organic compounds by the methods of Pregl. During this period, he was elected Secretary-treasurer of the Division of Microchemistry (now the Division of Analytical Chemistry) of the American Chemical Society. In 1940, Dr. Royer became an assistant director of the Physical Chemical Research Section, where he is now the assistant director of application research in charge of the Section.

Dr. Royer has been active in THE AMERICAN INSTITUTE OF CHEMISTS as a member of various committees; as chairman of the New Jersey Chapter, and as council representative from the New Jersey Chapter to the National Council.

Opportunities for the Chemist in the Sales Field

N. Harold Fyffe, F.A.I.C.

Sales Manager, Oldbury Electro-Chemical Co., 19 Rector St., New York 6, N. Y.

AFTER chemicals are manufactured they have to be sold. Many products have a great number of potentialities and are serviceable for many uses, but if the prospective buyer does not know about them, it is very difficult to move the material from the producers warehouses. Today the major companies buying chemicals are employing trained chemists to oversee their purchasing also and to take care of their specifications. On the other hand, the manufacturers of chemicals are coming to the point where they are encouraging the hiring of the chemists or chemical engineers who, because of their background will be able to talk the same language as those who are directly or indirectly in charge of the buying.

The selling field of chemicals has changed greatly since World War I, and if any one would look over the number of new products that have been put on the market in the twenty years intervening between both wars, they will see that it was necessary for the salesmen to have a technical training so that these products could be merchandised.

Too many people have the idea that a salesman is something that they have seen in the movies—the gentleman that comes along and gives the customer a big cigar, slaps him on the back, tells him what a good fellow he is, and therefore talks about everything else but business. However, times have changed greatly; this misconception may have been particularly true a few decades ago, but today the salesman must know what he is talking about. In fact, the salesman's work is to assist the customer in securing the proper raw materials either at the most economical price, or to obtain a material that will give his product better quality. The salesman is the eyes and ears of the company he represents; the purchaser judges the company by the representative. Therefore, it is necessary today to have qualified representatives.

The sales force is a source of ideas for the Research Department and the Market Research Department. Also it is very helpful in taking care of complaints as they come up, and many times it is influential in introducing a product after the preliminary surveys have been done by the Market Development Department. We know that there have been many

products which have not seen the light of day merely because they have not been put in the hands of a Sales Department. Some things that were very beneficial to humanity have been laid on the shelf; one in particular, we might say, would be penicillin, which laid around the laboratories for quite some time. The preliminary work on the sulfa-drugs was done a great many years ago and did not see the light of day until it was brought out in the 1930's.

The opportunities in the sales department are equal or better than other departments. One fact stands out very markedly, it is easy to qualify a salesman. He produces a definite amount in dollars and he costs his company a certain sum in salary and expenses. This is a very easy ratio to compute. Whereas a man's work can be evaluated on other jobs, it is not quite so simple as to evaluate a salesman.

The qualifications that a chemist or a chemical engineer should have for a sales job are (1) he should like people. He should like to be among people and enjoy their company. (2) He should be a clean-cut young man, and (3) he should know his product, so that he can discuss it, and his technical knowledge of it should be sufficient so that he can answer the majority of questions that are put to him. (4) he should know when to talk and most of all when to stop talking.

Symposium on Radioisotopes

The New York Section of the American Chemical Society has scheduled an all-day "Symposium on Radioisotopes," to be held in the Hotel Statler, New York, N.Y., January 19, 1951.

Ceramic Engineer Wanted

WANTED: Graduate ceramic engineer, several years' experience, to do production and development work on zircon, zirconia, alumina and magnesia shapes. Please reply to Box 101, THE CHEMIST.

Chemist Available

Chemist, Ph.D. with seven years as university assistant (physical chemistry) and ten years industrial experience (leader in laboratory of electrochemical concern, also in paint and tanning industry). 46 Qualified as Privat-Docent of university. Many publications. Languages: Hungarian, German, English. Born in Hungary, at present a D.P. in the American Zone in Germany. Desires position as laboratory chemist, analyst, or industrial research chemist in the U.S. Please reply to Box 100, The Chemist.

Cosmetic Courses at Clemson

Florence E. Wall, F.A.I.C., gave courses in Cosmetic Hygiene and the Teaching of Cosmetology, during the summer session at Clemson College, South Carolina, under the State Teacher Training Program for Industrial Education.

Committee on Patents

Annual Report 1949-1950

IN GENERAL, it can be stated that proposed legislation in the field of patents is in a state of flux. This is occasioned by the fact that there is at present before the subcommittee of the Committee on the Judiciary of the House of Representatives having jurisdiction over patents and the revision of laws a preliminary draft of a proposed bill for a general revision and codification of the patent laws. The proposed bill undertakes as one of its objects the revision and enactment of Title 35 of the United States Code relating to Patents. In this aspect of the work, the sections relating to patents are arranged and consolidated into a single enactment, with revisions and simplification made in coordinating the various acts. The second object of the draft is to present various amendments of substance. A number of the amendments and proposals have been inserted in broad terms to serve merely as a starting point for discussion. At this writing, the various amendments and proposals are the subject of study by many groups interested in the outcome.

At a meeting of the National Council of Patent Law Associations held in Washington, D.C. on February 8, 1950, a Coordinating Committee was formed to coordinate the views of the Patent Law Associations, other organizations, and individuals with respect to the proposed revision and amendment of the Patent Laws. A Drafting Committee was appointed at the same meeting to study the above-mentioned Committee Print and to prepare a revision and amendment of the Patent Laws based upon the Committee Print and containing only such changes in existing laws as in the judgment of the Drafting Committee would meet with substantial approval of the patent profession. This document, prepared under date of April 14, 1950, is entitled a "Re-Draft of Proposed Revision and Amendment of the Patent Laws."

Further work is now being done on the "Re-Draft" preparatory to submission to the House Judiciary Committee. Thereafter, it will be necessary for the Judiciary Committee to frame a bill and introduce it into the House. Just when the proposed bill will reach the stage of public hearings is uncertain.

Pending Bills

Many other measures have been introduced in the House and Senate in the 81st Congress, but these measures are held in abeyance for the time being. Among these, mention will be made only of the following:

S. 956 (McCarran) H.R. 2477 (Bryson)
Would repeal the Royalty Adjustment Act of 1948 (35 U.S.C. ##89-96) and provide a similar measure on a permanent basis, both for war and peace.

H.R. 98 (O'Hara) S. 1854 (Douglas) H.R. 4071 (O'Hara) H.R. 4155 (Gorski) H.R. 4692 (Gorski)

Designed to provide for the extension of the terms of patents of persons who served in the armed forces during World War II.

H.R. 1866 (Celler)
Defines "contributory infringement" and provides for protection of patent rights where enforcement against direct infringers is impracticable.

S. 56 (O'Mahoney) H.R. 988 (Jackson) H.R. 1240 (Mansfield) H.R. 2006 (Hobbs) H.R. 2734 (Celler)

While not specifically mentioning patents, these bills propose amending the Clayton Act to make illegal the acquisition among other things, of "the whole or any part of the assets" of one or more corporations engaged in commerce, where the effect may be substantially to lessen competition, etc.

H.R. 842 (Hoffernan)
Designed to introduce opposition proceedings into The American Patent System.

S.10 (O'Mahoney) S.11 (O'Mahoney Would require filing with the Department of Justice of every contract with, to, or from any foreign corporation or foreign nation relating to patents and licenses, as well as any license under any U.S. or foreign patent entered into by a domestic company with a foreign corporation.

S. 2518 (Wiley) H.R. 6436 (Church)

Designed to amend the following sections of the Revised Statutes: 4886, 4888, 4898, 4899, 4919, 4884, 4922, and to repeal 4917. Among other matters, these measures would formulate criteria of patentable invention, define contributory infringement, repeal the disclaimer law, and specify particularly that the patent grant constitutes property, etc. The Wiley Bill contains some favorable features a number of which have been taken into consideration in the House Judiciary Committee preliminary draft of a proposed bill to amend and revise the patent laws. No public hearings have yet been set on this bill.

Bills Passed

On March 1, 1950, the House amended S. 247, the National Science Foundation Bill, by inserting therein the provisions of H.R. 4846, after which the House passed S. 247 and tabled H.R. 4846. Prior to passage, amendments were adopted that require the clearance by the F.B.I. of all foreign nationals participating in the activities of the Foundation; the approval of the Secretary of Defense of regulations and procedures for security classification of information or property or contracts or other arrangements for the carrying on of such scientific research relating to national defense; also the approval of the Secretary of State relative to the authority to cooperate in international scientific research. The bill was then the subject of conference between representatives of the Senate and House; an agreement was reached on April 26, 1950, and the bill was sent back to the House and Senate for final action.

Bills Signed by the President

On March 4, 1950, the President signed S. 2328 (Wiley), which became Public Law 452 of the 81st Congress. This amends R.S. #482 to permit the Commissioner of Patents to designate any examiner of the primary grade or higher to serve as examiner-in-chief.

Hearings Scheduled

The House Judiciary Committee's Subcommittee #4 expects to hold hearings on May 10, 1950, on H.R. 6389, which is the House counterpart of S. 2557, the peace-time secrecy bill.

Atomic Energy Commission

Descriptions of 17 patents and 5 applications for patent owned by the U.S. Government and held by the Atomic Energy Commission have been transmitted to the U.S. Patent Office for registry and listing in the Official Register of Patents Available for Sale. The Commission will grant non-exclusive royalty-free licenses on the listed patents, as part of its program to make non-secret technological information available for use by industry The new group of 22 patents and applications bring to 89 the total number of Commission-held patents released for licensing.

Conclusion

The most important development in the field of patents is the preliminary draft of the proposed bill before the House Committee on Judiciary for a general revision and codification of patent laws. While there seems to be no objection to the proposal to codify the patent laws, various of the amendments embodied in the Committee Print are objectionable. As a matter of fact, certain of the proposals now made have been heretofore introduced and opposed by many groups and rejected. Instances are the attempt to provide for compulsory licensing under patents, the introduction of opposition proceedings into the American Patent System, and attempts to define patentability. The further course of the proposed codification and revision of the patent laws should be carefully scrutinized and studied.

—A. W. Deller, Chairman

September 8, 1950

Postscript:

H.R. 9133: This bill, to revise and codify the laws relating to Patents and the Patent Office, was introduced in Congress on July 17, 1950. The bill follows in general along the lines of bills previously introduced, except no provision is made for compulsory licensing. A section has been added on Government interests

in patents and contains a provision that the President may provide regulations governing the ownership of patent rights to inventions made by Government employees during the course of their employment.

I have been informed that no hearings will be held on H.R. 9133 at the present session of Congress, but a corresponding bill will be introduced soon after the 82nd Congress convenes in January and hearings are expected to be held shortly after the first of next year.

H.R. 9304 (Clemente): "A Bill to Prevent the Suppression of Inventions" was introduced in the House on August 2, 1950. It provides that where a licensee or assignee has failed after a period of five years to exploit an invention, it may be subject to compulsory licensing. From the peculiar wording of this bill, an independent inventor who has not assigned his invention would not come under the terms of the bill. Also, a mere non-exclusive licensee would have no right to grant a license. The bill was possibly intended to take care of a situation where a corporation has its employees under contract to assign and the "patentee" and assignee are thus the same.

H.R. 9366 (Reed): Provides for the extension of the terms of patents where the use, exploitation or promotion was prevented or delayed, etc., by causes due to war, national emergency, etc. In general, such legislation is not favored. Differentiation between patents as property and other types of property, the use of which was interfered with by war, etc., should not be made.

S. 868: The House on August 28, 1950, passed by voice vote this bill which provides for the dissemination of technological, scientific and engineering information to American industry and gives statutory authority to the Office of Technical Services. The House eliminated Section 3 providing for the recording of technical developments. If the Senate does not accept the House amendment, a conference will be necessary to iron out the matter.

The bill establishing the National Science Foundation was signed by the President on May 10, 1950, and is now Public Law 507 (1950). However, thus far the House Appropriations Committee has rejected President Truman's request for $400,000 to establish the Foundation. The House Committee is not opposed to the Foundation but believes it should be deferred on the ground that it "will not provide early aid in our defense effort."

—A. W. Deller, *Chairman*

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Communications

Economic Status

To the Editor:

Here I am back again after a most enjoyable visit to a land of tropic splendor and exotic beauty. . .Among the journals to greet me on my return was THE CHEMIST—always intriguing with its news of the day about chemists and their progress, their thoughts and their doings. How the INSTITUTE has forged ahead! Also there were Department of Commerce publications with their wealth of information, notably the *Monthly Industry Reports* and *Foreign Commerce Weekly*.

I was greatly impressed with an article in *Foreign Commerce Weekly*, March 13: "U.S. Imports of Chemicals and Allied Products Show Further Decline," by Koster and Evans, Chemical Branch, Office of International Trade. It is more than a mere statistical presentation and contains much food for thought. You may care to call it to the attention of readers of THE CHEMIST. (The March 13, 1950, issue of *Foreign Commerce Weekly* may be obtained for 20¢ from the Superintendent of Documents, U.S. Gov. Printing Office, Washington 25, D.C.)

I wonder how many AIC members know about the work of the department and avail themselves of its services, domestic and world wide, and its published studies on economic aspects of chemical science and industry. Many of these articles delineate trends that may affect sooner or later the chemist's own economic status—his livelihood . . .

—J. N. Taylor, F.A.I.C.

Refrigerator Explosion Hazard

To the Editor:

This is written for the purpose of disseminating as widely as possible a warning against the practice of storing flammable liquids in conventional household refrigerators.

Many laboratories, manufacturers, hospitals, and other users of such hazardous liquids as alcohol, ethyl ether, benzene, and volatile petroleum solvents often refrigerate these fluids in an ordinary household refrigerator which may have a number of electrical components within or contiguous to the storage space. These electrical parts, i. e., controller, light switch, lampholders, etc., within the storage compartment are not designed to be safe for use in atmospheres containing explosive vapors, and fluids which may vaporize to form such an atmosphere, or mixtures which may release flammable gases should not be

stored in a refrigerator unless it is specifically designed for the purpose.

Likewise, the condensing unit containing motor, starting relay, etc., may be so located that upon opening the cabinet door the flammable vapors may be ignited from these sources.

Insurance companies, refrigerator manufacturers, and safety authorities have expressed concern over this practice in view of a number of explosions which have already occurred . . .

Pending the development of refrigerators especially designed for this purpose, it would be desirable in the interest of safety where it is necessary to place flammable liquids in refrigerators

(a) to employ a refrigerator with no electrical components within the cooling compartment, and

(b) to employ a refrigerator the condensing unit of which employs a hermetic or totally enclosed type motor.

—C. C. Fitzsimmons

Associate Engineer, Casualty and Automotive Department, Underwriters' Laboratories, Inc.

Annual Meeting

I cannot tell you how pleased I was with the annual meeting in New York. It was a grand occasion no matter what way you consider it. The character of the program was outstanding as was the large group of people in attendance.

—C. C. Concannon, F.A.I.C.

Articles & Editorials

To the Editor:

The writer is a regular reader of THE CHEMIST and is repeatedly impressed by the quality of the articles and editorials appearing in it . . .

—W. H. Markwood, Jr.

Interesting

To the Secretary:

Many of the issues of THE CHEMIST are interesting and thought-provoking.

—Dr. A. Renfrew, F.A.I.C.

Instrument Society to Meet

The Instrument Society of America, Philadelphia Section, will meet at the Bellevue-Stratford Hotel, Philadelphia, Pa., November second, for an all-day session, featuring a symposium on "Industrial Waste Disposal— a Problem for Instrumentation."

Aries Appoints Simpson

Dr. Robert S. Aries, F.A.I.C., of R. S. Aries & Associates, 400 Madison Avenue, New York, N.Y., announces that Dr. C. E. Simpson has joined the firm in the capacity of senior associate. Dr. Simpson is a Canadian of extensive experience in the consulting field, particularly as applied to plant layout and mechanical design work. Recently with the Carrier Corporation, he is familiar with new developments in air conditioning and low temperature refrigeration.

Pulp and Paper Foundation Wins Support

John B. Calkin, F.A.I.C., director of the University of Maine's Department of Industrial Cooperation, announces that the University's new Pulp and Paper Foundation is "receiving the whole-hearted support of the industry, its affiliates, suppliers, and key personnel." The first scholarship for the new Foundation was underwritten by the Beloit Iron Works, Beloit, Wisconsin, builders of paper making machinery. The first company membership was subscribed by the General Dyestuff Corporation, New York, N.Y.; the first paper company membership by the Great Northern Paper Company, and the first individual membership by Theodore W. Prescott, of the Scott Paper Company, Chester, Pa.

Dr. Chester A. Snell, F.A.I.C., represented Foster D. Snell, Inc., 29 West 15th St., New York, N.Y., at the First United States Technical Conference on Air Pollution held at the Wardman Park Hotel, Washington D.C., May third to fifth, under the sponsorship of the Federal Interdepartmental Committee. As director of the analytical department of the firm, Dr. Snell has conducted a number of extensive surveys of air contamination. He has presented a number of papers on the subject in recent months.

More Annual Meeting Papers Available

The papers presented at the AIC 1950 Annual Meeting were published or abstracted in the June and July issues of THE CHEMIST. Where abstracts were given, the July CHEMIST indicated the availability of the complete papers. Since that time, the paper on "Food and Nutrition," abstracted in July, by John H. Nair, F.A.I.C., has now become available. Also available is the paper on "Detergents of the Future" by Dr. Arthur L. Fox, director of research of Colgate-Palmolive-Peet. Copies of these papers may be secured by ordering them from THE CHEMIST, enclosing fifty cents for each copy to cover the expense of mimeographing.

Dr. Meyer Granted Sabbatical Leave

Dr. Martin Meyer, F.A.I.C., former chairman of the New York Chapter, AIC, and now Council Representative of the New York Chapter, has been granted a sabbatical leave from Brooklyn College, Brooklyn, N.Y., for one year from September 1, 1950.

Evans Adds to Staff

Evans Research & Development Corporation, 250 E. 43rd Street, New York, N.Y., announces that John Edward Boeheim has joined the staff as research assistant. He received the B.S. degree in chemistry from St. Lawrence University.

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James R. Withrow, *At-Large*

July Meeting

The 269th meeting of the National council was held as a special meeting, July 19, 1950, at 6:00 p.m., at The Chemists' Club, New York, N.Y. President Lawrence H. Flett presided.

The following officers and councilors were present: Messrs. Harry Burrell, C. C. Concannon, Gustavus J. Esselen, L. H. Flett, F. A. Hessel, Martin Meyer, and L. Van Doren. Walter J. Baeza, K. M. Herstein, M. J. Kelley, Charles Pollard, C. W. Rivise, and Mr. Bass were present.

The minutes of the preceding meeting were accepted.

Upon motion, the Council approved the plan of the Employment Project Committee of the New York Chapter:

(1) To raise by gift and loan $20,000. from the AIC membership;

or (2) To raise by gift and loan a substantial part of $20,000. from the AIC membership, and the remainder from interested chemical companies; and (3) To make an appeal for funds in THE CHEMIST.

Upon motion, the Council approved for publication in THE CHEMIST the draft of the appeal as presented and with the minor changes suggested by the Council. (See page 345, THE CHEMIST, September.)

An invitation from the Niagara Chapter, asking that the AIC hold its 1951 Annual Meeting in that area, was presented. Upon motion, it was decided to hold the 1951 Annual Meeting in the area of the Niagara Chapter, and that the Chemical Institute of Canada be notified. President Flett was authorized to appoint the necessary committees.

Letters from the Chicago Chapter were presented, suggesting that the AIC hold a dinner, cocktail party, or luncheon, during the ACS meeting there.

The following new member was elected:

FELLOW

Remensnyder, John P.
President, Heyden Chemical Corporation, New York, N.Y.

RAISED FROM FELLOW TO LIFE MEMBER

Wall, Florence E.
Consultant, 210 East 68th Street, New York 21, N.Y.

Local Chapter News

C. P. Neidig, F.A.I.C.

AIC Dinner at ACS Meeting

In connection with the 118th national meeting of the American Chemical Society, in Chicago, an AIC dinner was held on Tuesday of the meeting week. The program was principally social, but included short talks by national president Lawrence H. Flett and by Bruce M. Bare, chairman of the Chicago AIC Chapter. Mr. Flett emphasized the desirability of broadening chemists' experience, so that they will be fitted to handle wide responsibilities and to hold executive positions in business.

New Jersey

The New Jersey Chapter will meet October 10, 1950, at 8:00 p.m. at the Public Service Auditorium, 80 Park Place, Newark, N.J., to hear Johnson O'Connor, formerly of Stevens Institute, founder of the Johnson O'Connor Research Foundation, speak on "What Is Your Aptitude? How Does it Fit Chemistry or Chemical Engineering?"

Drs. Donald B. Keyes, F.A.I.C., Sidney D. Kirkpatrick, F.A.I.C., H. B. McClure, F.A.I.C., and Walter J. Murphy, F.A.I.C., have been elected directors-at-large of the Armed Forces Chemical Association.

Hamer Appointed Chief of Section

Dr. Walter J. Hamer, F.A.I.C., has been appointed chief of the Electrochemistry Section of the National Bureau of Standards to succeed Dr. George W. Vinal, retired. Dr. Hamer received the B.S. degree from Juniata College in 1929 and the Ph.D. in physical chemistry from Yale University in 1932. During World War II, he worked for the National Defense Research Council and the Manhattan Project. In 1945, he received Certificates of Award from the Office of Scientific Research and Development and from the Manhattan Project. His many technical papers reflect his investigations of electrolytes, storage batteries, dry cells, and the electrometric determination of acidity. His work on the pH of potassium acid phthalate has been accepted by the British Standards Institution as the primary pH Standard of Great Britain.

Fine Appointed

Howard Farkas, F.A.I.C., executive vice president of the U.S. Stoneware Company, Akron, Ohio, announces the appointment of G. W. Fine as assistant sales manager of U.S. Stoneware's Plastic Coatings Division. Mr. Fine studied chemical engineering at the Case School of Applied Science and was associated with Sherwin Williams Company for seven years.

Egloff Elected

Dr. Gustav Egloff, Hon. A.I.C., has been elected a Fellow of the Royal Society of Arts of Great Britain, and has been invited to become a member of the Society of the American Military Engineers, Washington, D.C.

At the national meeting of the American Chemical Society in Chicago, Dr. Egloff addressed the symposium on "Communication of Chemical Information," Division of Chemical Literature, on September sixth. The title of Dr. Egloff's talk is "Interpreting Chemistry to the Layman."

Golf Champion

The Golf Championship of The Chemists' Club, New York, N.Y., was won by ex-tennis star Dr. Eugene McCauliff, F.A.I.C., technical sales director of Glyco Products Co., Inc., Brooklyn 2, N.Y. He shot 77 over the narrow, wood-bordered fairways at the Bonnie Briar Country Club, Larchmont, N.Y., to annex the prize.

Dr. James R. Withrow, Hon. AIC, consulting technologist, Columbus, Ohio, spoke recently to a group of business men at a dinner at the Union League, Broad Street, Philadelphia. A year ago, he spoke to this group on "Religion, Education, and Business," and this year he was invited to speak again on the subject.

Necrology

Robert E. Glenk

Dr. Robert E. Glenk, past curator and founder of the Louisiana State Museum, died April second at the Touro Infirmary, after a lengthy illness, at the age of seventy-nine. He was a native of Esslingen, Germany, who was brought to this country as an infant. He received his early education in the public schools of Philadelphia and was graduated with the Ph.B. in Pharmacy from the Philadelphia College of Pharmacy and Sciences in 1891. In 1936, he received an honorary degree from this institution. In 1899, he obtained the B.S. in Chemistry from Louisiana State University. He became a member of the Louisiana State Sugar Experiment Station, where he contributed much valuable original work on the processing of cane juice into refined sugar.

During the first few years of this century, he conceived of and contributed actively toward the formation of the Louisiana State Museum. This act was undoubtedly his most significant contribution to our community and to the natural sciences of this section. He acted as curator and director of the Museum for the major portion of fifty years.

He was a founder and charter member of the Louisiana Section of the American Chemical Society and he was elected to Life Member and served as Section Historian for the past fourteen years. He has held other important offices in this Section during the last three decades, when he gave liberally of his time, efforts, and constructive thought toward the benefit and advancement of the Section.

Many scientific societies were honored by his membership. He held offices in many of them, including the American Chemical Society, the National Academy of Sciences, the American Association for the Advancement of Science, and the American Museum Association. He became a Fellow of THE AMERICAN INSTITUTE OF CHEMISTS in 1948. He contributed liberally with scientific articles to many publications and he enjoyed a national reputation as an authority in the broad field of the natural sciences. He has been listed in *American Men of Science* since 1926.

For many years he was a member of the Round Table Club. He was a member of the board of the Unitarian Church of New Orleans. Museum work was both his vocation and his avocation. Another hobby was his interest in perfumes, natural and synthetic. His interests covered all the natural sciences and his status as a scholar is evidenced by his complete and carefully selected library covering these branches of learning.

He enjoyed a large host of friends

who admired him for his superior character, his scholarly attainments, his civic pride. Our INSTITUTE has lost one of its most treasured members who endeared himself to all who knew him and will long be remembered by all who met him.

—Harold A. Levey, F.A.I.C.
Palmer Caldwell
John L. Porter

Edward M. Hanzely

Edward M. Hanzely, analytical chemist, Crown Cork & Seal Company, Inc., Highlandtown, Baltimore, Maryland, died June 21, 1950, at the age of thirty-six. Born in Baltimore, he studied at Baltimore Polytechnic Institute, then at Loyola College, which conferred the B.S. degree on him. He took microchemistry for two additional years at Loyola, which awarded him the Jenkins Gold Medal for chemistry. He also received a medal from the American International Academy.

In 1936, he joined Crown Cork and Seal Company as glass chemist, becoming analytical chemist in 1938. He was considered to be an "exceptionally good analytical chemist, and his work in micro-analysis outstanding." He had been collecting material for a book on glass, and before 1941 had prepared a patent for "a method of sending and receiving colored television." He developed a number of glass formulas and methods for precipitation of metals in glass, and for determining trace metals in other materials.

Mr. Hanzely was active in the Baltimore Chapter of THE AMERICAN INSTITUTE OF CHEMISTS, which he joined as a Fellow in 1941.

Samuel G. Trepp

Dr. Samuel G. Trepp, forty-four, of 135 Court Street, Dedham, Mass., research chemist for Bird & Son of East Walpole, Mass, died June 23rd at Massachusetts Memorial Hospital in Boston.

Born at Lewistown, Montana, he was graduated from the University of Michigan with the degrees of B.S. in 1929; M.S. in 1930, and Ph.D. in 1932. Dr. Trepp worked for National Aniline of Buffalo, N.Y., on detergents and gum inhibitors until 1937, when he became associated with the United Gas Improvement Company of Philadelphia, where he worked on resins and cyclopentadiene.

In 1944, Dr. Trepp came to Bird & Son as chief chemist of the Research Division and engaged in problems concerning linoleum, asphalt roofing, and paper products.

He was a member of the American Chemical Society, the New England Paint and Varnish Production Club Phi Lambda Upsilon, and Sigma Xi. His name appears in *American Men of Science*. He became a Fellow of

THE AMERICAN INSTITUTE OF CHEMISTS in 1949.

He leaves his wife, Alice (Potts) Trepp and four children, Katharine, Mary, Robert, and Elizabeth. He has four sisters and one brother who reside in Montana, Oregon, and Washington.

CIC Elects Officers

The Chemical Institute of Canada elected the following officers at its Annual Conference in Toronto on June 19th: President, Dr. A. S. Beatty, Fisheries Experimental Station, Halifax, N.S.; Vice president, Dr. H. G. Thode, McMaster University, Hamilton, Ont.; Chairman of Board, Dr. D. M. Morrison, Shell Oil Refinery, Montreal East, Que.; Treasurer, R. H. Rimmer, Aluminum Laboratories, Ltd., P.O. Box 84, Kingston, Ont., and General Manager and Secretary, Dr. Garnet T. Page, 18 Rideau Street, Ottawa, Ont. The Institute will hold its 1951 Annual Conference in Winnipeg, Manitoba, early in June.

Research Grants

The Research Corporation, 405 Lexington Avenue, New York 17, N.Y., announces that it has allocated, since November 1, 1949, nearly $550,000, in the form of grants-in-aid of research to colleges, universities and scientific institutions in the United States.

Meetings—American Society for Testing Materials

1951: Spring Meeting and Committee Week, Cincinnati, Ohio, March 5 to 9, inclusive.

1951: Annual Meeting, Atlantic City, N.J., June 18 to 22, inclusive.

1952: Spring Meeting and Committee Week, Cleveland, Ohio. March 3 to 7, inclusive (probably).

1952: Annual Meeting, New York, N.Y. June 23 to 27, inclusive. The biennial Apparatus and Photographic Exhibits will be held.

New ASTM Committee

The Board of Directors for the American Society for Testing Materials has authorized the formation of a new technical Committee on Sampling and Analysis of Atmospheric Pollution. Dr. Louis C. McCabe, chief of Air and Stream Pollution, U.S. Bureau of Mines, has accepted the temporary chairmanship of the new committee.

Spectroscopy Meeting

The November meeting of the Society for Applied Spectroscopy will be held Nov. 7th, at 8:00 p.m. at the Socony-Vacuum Training Center, 63 Park Row, New York, N. Y. David Richardson, Bausch & Lomb Optical Co., will speak on "Echelles vs. gratings."

For Your Library

Chemistry of Specific Selective and Sensitive Reactions

By Fritz Feigl. Academic Press, N.Y. 1949. XIV plus 740 pp. $13.50.

Thirty years ago, Fritz Feigl obtained the doctor's degree for his investigations of "spot tests". Nearly twenty years ago, he published a systematic account of drop-reactions ("TuepfelReaktionen") in a book of which a third English edition appeared in 1946. The present book deals with the same subject in a broad manner, combining a vast amount of work from many authors with his own. It is the culmination of difficult years of effort. "The author began his preparatory studies long before the war but the laboriously gathered material was lost during his flight from Europe. In 1941 I was able to resume these studies as a result of an invitation by the Brazilian government . . . " (p.X.) This devotion to "one" subject during a very active lifetime is not a sign of singlemindedness. The exploration of specific, selective, and sensitive reactions leads into the finest details of chemical behavior, embracing problems of the chemical constitution of complex organic compounds, influences and interactions which go far beyond "school chemistry." This fundamental inquiry, in the manner of true science, makes new questions possible and sensible while, and because, old ones are being answered.

From the start, and repeatedly afterwards, Feigl emphasizes that this work is not simply a description of reagents, not merely an enumeration of reactions, but the investigation of tests. He points to the essential role of the conditions under which the different substances are brought together. The word conditions here comprises concentration, temperature, solvent, partners in solution, rate and sequence of operations, and specific surface developments. With proper attention to such factors, traces of substances can be detected and measured, for example, the copper in 10 ml. of a1: 1 billion solution. On the other hand, valuable improvements in such common operations as the precipitation of calcium oxalate can be achieved, and general ideas about relationships between structure and solubility leads to an inexpensive method of extracting caffeine from coffee beans (p. 386).

Thus, the three-s-reactions comprise a vast field. Of general rules, there are few which do not have individual exceptions. Feigl discusses them in the first five chapters. Then he devotes over 200-pages to specific organic reagents. Part of this subject is later on considered from a different angle in the chapter of surface effects, which includes colloids, adsorptions, and chromatography. Before that, surprising actions of "indifferent" solvents, influences of size and form of molecules on solubilities are described. About 60-pages are devoted to the intricacies of the formation of materials and space-bound "topochemical" reactions. A chapter on the analytical use of photochemistry concludes the text.

C. F. Schoenbein, who in some of his work can be considered as the grandfather of this penetrating study, once (in 1853) spoke of the "The drama of chemical reaction". This drama is enfolded by Feigl. His book is, therefore, of high value not only for the analyst, and not only the theoretical chemist will enjoy it. An industrial chemist, whether he has to do with metals or phenols, with catalysts or dyestuffs, will find it revealing and stimulating.

I hope that the author will include in the second edition the highly selective and specific reactions of a biochemical nature, and that he will amplify the subject index which in its present thirty pages does not disclose all of the treasures of the book.

Ralph E. Oesper's translation deserves high praise.

—Dr. Eduard Farber, F.A.I.C.

The Physics and Chemistry of Cellulose Fibres

By P. H. Hermans. Elsevier's Polymer Series. Elsevier Publishing Co., Inc. 1949. *XXII*—534 *pp.* $9.50.

This book is written by an authority in the rayon fields, who at present is the

director of the Laboratory for Cellulose Research of the A. K. U. at Utrecht (Netherlands). It is the result of the realization by the author that a regrettable gap exists at present between academic cellulose research on the one hand and applied research and the empirical "know-how" of the rayon men on the other. There is no doubt that this book will do a great deal to bridge this gap especially in view of the fact that the industry has lately shown signs of renewed interest in fundamental research.

The book consists of three parts. Part I deals with the constitution, crystalline and micellar structure of cellulose, as well as with its molecular weight, chemical behavior and dispersion. Part II discusses the morphology, micro structure and physical and chemical behavior of cellulose fibres, while Part III deals with artificial cellulose fibers and represents a thorough treatment of the problems which confront the manufacturer. It is in this important part that the author's wide and varied experience enables him to make an extremely valuable contribution to the knowledge of physical chemistry of cellulose.

The work is wholeheartedly recommended to all those who are interested in cellulose chemistry.

—William H. Van Delden, F.A.I.C.

Principles and Practice of Spectrochemical Analysis

By Norman H Nachtrieb. McGraw-Hill Book Co. 1950. 324 *pp.* $4.50

By placing so much experience and so many references between covers, this excellent book by a well-known investigator in the field will be of great value to the practicing analytical spectroscopist. When accompanied by supplementary lectures and well designed laboratory exercises, it might be used as an introductory text. It will be a must reference for courses in instrumental methods of analysis.

The author has limited himself to the application of emission spectroscopy to problems of chemical analysis. Discussion of spectrographic technics is supplemented by associated chemical technics which are often as important as the spectrographic operations.

The first eight chapters deal with the principles of spectroscopy. These include a brief history, suggestions for laboratory installation, prism and grating spectrographs, the origin of spectra, accessory optical equipment, direct reading instruments, the photographic process, and evaluation of photometric data. The section on definitions dealing with terms used (and often misused) by the spectroscopist is in keeping with present trends toward a development of exactness in nomenclature in colorimetry and allied fields.

The second half of the book deals with the practical side of spectrochemical analysis by reviewing recent work in the fields of metallurgy, refractory materials, soluble substances, and trace constituents. The chapter on spectrum excitation includes a discussion of the characteristics and mechanisms of flame, arc (DC and AC), and spark sources. In discussing the total burning procedures used in the analysis of refractories reasons are given for difficulties to be expected with Slavin's total energy method. We believe that Slavin used the highly reproducible 3125 A line of the mercury vapor spectrum in producing an intensity scale rather than iron spectrum as stated on page 248. The chapter on solutions includes a review of the elegant copper spark procedure of the author used in detection and estimation of *millimicrogram* quantities of metals.

—Dr. Chester A. Snell, F.A.I.C.

Chemical Books Abroad

Rudolph Seiden, F.A.I.C.

Sir Isaac Pitman & Sons, London: *Practical Pharmaceutical Chemistry*, by F. N. Appleyard and C. G. Lyons, 7th ed., 172 pp., 10s 6d. Analytical methods for the determination of a great number of representative chemicals and pharmaceutical preparations are given. One chapter (15 pages) deals with the synthesis of simple drugs.

Longmans, Green & Co., London and New York: *Biochemistry in Relation to Medicine*, by C. W. Carter and R. H. S. Thompson, 1949, 442 pp., $5.00. Even though this book was written primarily for students of medicine, it should be of interest to biochemists as well. Not only

does it give brief accounts of the chemistry of carbohydrates, lipids, amino acids and proteins and of the changes these substances undergo in the body, but it also discusses thoroughly enzymes, biological oxidation, hemoglobin, vitamins, bile, etc. Only the glandular products do not seem to be considered sufficiently; a comprehensive chapter on hormones should be included in a new edition. The many experimental sections in the book and the bibliography (20 pages) are well selected.

S. Karger, Basel: *Synthetische Methoden der Organischen Chemie*, by W. Theilheimer. To date, three volumes of this "repertorium" have been published: No. 1, 222 pp. (Sfr. 25.—) and No. 2, 309 pp. (Sfr. 35.-) in 1948; No. 3, 412 pp. (SFr. 40.-) in 1949. Each volume brings the newest methods for the synthesis of organic compounds and improvements of older methods found in the leading chemical journals of the world. They are arranged according to a simple reaction system (a modification of that of Weygand) and thus easily found, although neither their names nor that of their authors be known. There is also an extensive general index in each book covering the methods described in it and in the previously published volumes. The latest volume includes, for the first time, a large number of abstracts of methods developed by American chemists; most of them were published in 1946-7, some as late as 1948. An English key is added to make the books more useful to readers who do not understand German. However, it must be emphasized that the published abstracts or literature references, in most cases, will not suffice as working methods and that reading of the cited original article or of a more detailed extract in *Chemical Abstracts* or *Zentralblatt* will be necessary.

E. & F. N. Spon, Ltd., London S.W.1: *Bayley's Chemists' Pocket Book*, by F .G. Angell, 10th ed., 508 pp., 30 s. This pocket book compiles chemical facts and figures in text and numerous tables, as the following chapter headings indicate: Mathematics: Weighs and Measures; Physics; General Analysis; Gravimetric Analysis; Volumetric Analysis; Miscellaneous Photography. This little volume reminds one of a miniature "Lange" and also of the "Chemiker-Kalender", which, however, appeared annually and contained space for notes, addresses, etc. A similar Chemical Pocket Calendar, perhaps in two parts (one of which could be the slightly modified "Bayley"), should be welcomed by American and English chemists. (In fact, I have been playing with the idea of editing such a two-volume pocket-book set for some time). • *Chemical Constitution and Biological Activity*, by W. A. Sexton, 1949, 412 pp., 55 s. An excellent monograph—a "must" for the library of any researcher interested in the important relationship between chemical constitution of a substance and its biological activity. After a general discussion of the subject, the author brings in the second part of his book representative vitamins, sulfonamides, enzymes, antibiotics, hormones, bactericides, antiprotozoal drugs, fungicides, insecticides, anthelmintics, plant growth regulators, antigens and antibodies, to provide illustrations of the principles outlined in the first five chapters, the titles of which are: Macromolecules; Chemical Mechanisms Determining Drug Activity; Physico-chemical Considerations; Modifications of Drugs by Living Organisms; and the Effects of Specific Chemical Groupings.

Verlag Chemie, Wienheim / Bergstr.: *Vom Wasser*, by Wilhelm Husmann, 1949, 226 pp., DM 20. This is Volume 17 of the year-books for water chemistry and the technic of water purification; it contains 20 articles written by 16 experts. • *Ueber Gaszentrifugen*, by K. Beyerle, W. Groth, P. Harteck and H. Jensen, 1950, 67 pp. with 29 ill., DM 9.60. The authors developed a gas centrifuge which in 1942 was used for the enrichment of U^{235} and now proves useful for the concentration of the light and heavy isotopes of X, Kr, Se, Ge, and other elements.

Tauschnitz Edition, Hamburg 1: *Technisches Woerterbuch: Deutsch - Englisch* (Vol. 1, by Richard Ernst, 1948, 607 pp., DM 16.50. Publisher and editor are well-known for their dictionaries; this volume contains the vocabulary of modern industrial technics, including that of chemistry, physics, mathematics and engineering. It should prove of great help to those who read or translate German technical literature.

Information

The following publications of the National Bureau of Standards are available, at prices given, from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

RP 1964 "Heats, Equilibrium Constants, and Free Energies of Formation of the C_5 to C_8 Diolefins, Styrene, and the Methylstyrenes." 16 pp. 10 cents.

RP 1967 "Surface Available to Nitrogen in Hydrated Portland Cements." 11pp. 10 cents.

RP 1968 "Heat of Isomerization of the Two Butadienes." 9 pp. 10 cents. RP 1971 "Properties of Aqueous Solutions of Perchloric Acid." 21 pp. 15 cents.

RP 1948 "Kinetic Study of the Reaction of Carbon Adsorbents with Oxygen." 9 pp. 10 cents.

RP 1951 "Treatment of Leather with Synthetic Resins." 11 pp. 10 cents.

"Non-corrosive 'Flex-i-liner' Pumps." Information sheets. Vanton Pump Corporation, Empire State Building, New York 1, N.Y.

"Organic Chemicals. List of translations of 84 German and Russian reports dealing with hydrocarbons." Bulletin 36. Research Information Service, 509 Fifth Avenue, New York 17, N.Y.

"Catalogue of Books Old and Modern." Includes science. Wilson and Company, 57, Leather Lane, Holborn, London, E.C. 1, England.

"Properties of Technically Important Hexavalent Chromium Compounds." Serial No. 56. Mutual Chemical Company of America, 270 Madison Ave., New York 16, N.Y.

"New Liquid Detergent, *Ultrawet* 60L." Information sheet. The Atlantic Refining Co., Chemical Products Section, 260 S. Broad Street, Philadelphia, Pa.

"New Compact Chemical Feeder, the *Feed-Rator*." Information sheet. Fischer & Porter Company, Hatboro, Pa.

"Isotopenbericht", by Dr. Mattauch. Also in English as "Isotopic Report." 250 pp. $11.05. Einar Munksgaard, 6, Norregade, Copenhagen, Denmark.

"Catalogue 136". Catalog of books and clearance list. Price twopence. Davis & Orioli, 56, Maddox Street, London, W.1, England.

"New Line of Straight Centrifugal Pumps." Marlow Pumps, Ridgewood, N.J.

"Rubber. Problem Child Among Our Basic Commodities." P.W. Litchfield, The Goodyear Tire & Rubber Company.

"Ising Synthetic Aromatic Chemicals. Isolaromes, Truodors." Catalog. The C. E. Ising Corp., Mfg. Chemists, Flushing, N.Y.

"New Arco Microknife." Henry A. Gardner Laboratory, Inc., 4723 Elm St., Bethesda 14, Maryland.

"Improved Calgonite." Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa.

"Precautionary Fire and Explosion Safeguards in the Use of Chlorine Dioxide for Industrial Bleaching." National Board of Fire Underwriters, 85 John St., New York 7, N.Y.

"Plastic Welding," American Agile Corp., Plastics Div., 5806 Hough Ave., Cleveland 3, Ohio.

"New Resin Guide for Surface Coatings." American Cyanamid Co., Coating Resins Dept., 30 Rockefeller Plaza, New York 20, N.Y.

"Available Patents: Plastic Products and Processes." 76 pp. 25 cents. Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

"Super Scottsonizing. A Process for Hardening Stainless Steel." C. U. Scott & Son, Inc., Rock Island, Illinois.

"New Method of Tank Heating and Cooling." Kold-Hold Mfg. Co., Lansing, Michigan.

Consulting Chemists Consider Public Relations

The annual "Open Door" dinner meeting of the Association of Consulting Chemists and Chemical Engineers, Inc., 50 East 41st Street, New York, N.Y., will be held October 24th at the Hotel Shelburne, New York, N.Y. A symposium on "Public Relations and the Consultant" will be featured. Paul B. Slawter, Jr., vice president of the House of J. Hayden Twiss, New York, N.Y. will be the speaker. John Sasso, industrial production editor of *Business Week*, will serve as moderator.

Mark Wins Honorary Degree

Dr. Herman F. Mark, F.A.I.C., director of the Institute of Polymer Research at the Polytechnic Institute of Brooklyn, N.Y., has been awarded the honorary Doctor of Engineering degree by the University of Liege, Belgium. Dr. Mark, who was made an honorary fellow of the Indian Academy of Science in 1949, is chairman of the Wood Chemistry Committee of the Food and Agricultural Organization in the United Nations, and chairman of the Commission of Macromolecules in the National Research Council and in the Union Internationale de Chimie. A member of the Academies of Science in New York, Vienna, Budapest, Bucharest and Madrid, he is honorary president of the American Society for European Chemists and a foreign member of the Max Planck Society.

Condensates

Ed. F. Degering, F.A.I.C.

Armour Research Foundation

How the "schmere" chemist emerged from the slime is indicated by the following incident. In 1923, Herman A. Bruson went to Switzerland to do graduate work in organic chemistry under the renowned Professor Staudinger. Bruson was to make some studies on a group of chemicals obtained from the pepper plant, and Staudinger had placed an order for the materials with the I.G.F. organization in Germany.

In 1923 production in Germany was chaotic, so that the delivery of the pepper-plant chemicals was delayed. Staudinger decided that too much time was being lost, and that his new research associate ought to start some other work. Accordingly, he provided Bruson, for the sum of $160. with a glass jar containing one kilogram of a mixture of crystalline and liquid polymers of cyclopentadiene.

This material had been carefully collected over a period of three years in a German chemical works where coal tar was being separated into its many components, and had already been preliminarily purified.

Continuing the purification, Bruson, who told the story on himself in a lecture in Boston, was disappointed after a fortnight of work to find that both of his purified "fractions," solid and liquid, had the same composition and chemical properties.

With the typical "bah" attitude of the disgruntled chemist, Bruson then craved a bit of diversion. He had read that cyclopentadiene monomer was supposed to explode when mixed with sulfuric acid. He made such a mixture— and the prophecy was noisily fulfilled. It did explode, with vertical exuberance!

When Bruson collected some of the product, from the ceiling, he was disgusted to find that the black material was not the nice crystalline polymers as received in the jar, but was gummy and stretchy like rubber.

But his disgust was more than balanced by the enthusiasm of his master over the stuff resulting from the explosion: "An interesting new synthetic rubber, maybe, yes? Sehr interessante, oui? Make some more. We will study ziss carefully!"

A dibasic lead phosphite, 2 PbO. $PbHPO_3.\frac{1}{2}H_2O$, produced by National Lead, is an unusually good stabilizer for vinyl plastics. It decomposes spontaneously at room temperature, however, but the decomposition is surprisingly gentle, is not accompanied by noticeable heat release or flame, and does not produce any gaseous products. Once begun, moreover, it carries through the entire mass.

About sixty per cent of current drug sales consist of products which were not available ten years ago.

The $66,000,000 Basin-Ozark Pipe Line System, built jointly by Empire Pipe Line Company, Shell Pipe Line Corporation, Sinclair Refining Company, and Texas Pipe Line Company, stretches from Jal, New Mexico, to the Shell Wood River refinery (1,000 miles), with an offshoot to Patoka, Illinois.

About 250 mg. of vitamin C, given three or four times a day, produced a striking improvement in about half of the patients suffering from hay fever.

Cobione is the Merck trade name for commercially available crystalline vitamin B-12.

America's successful businesses know today what they'll spend on research next year—and the next—and the next. They know the practical and profitable use to which they'll put the results of the research. And they have already planned to expend two, or three, or even five to six per cent of their future sales dollars on industrial research.

—*Chemistry in Action*

In the pursuit of even the highest branches of human inquiry, the commoner qualities are found the most useful; such as common sense, attention, application, and perseverance.

—Samuel Smiles

are your

- STILLS
- DRYERS
- EVAPORATORS
- CRYSTALLIZERS
- PROCESS VESSELS

OPERATING AT VACUUMS LIMITED BY THE VAPOR PRESSURE OF THE CONDENSATE?

Many stills, dryers, evaporators, crystallizers and other processing vessels are operating at vacua limited by the vapor pressure of the condensate. This means on the average an absolute pressure of about 2.0" Hg. Most owners of such equipment do not realize how practical and economical it is to put a Booster Evactor in the line between the vessel and the condenser and maintain an absolute pressure of 0.5", 0.25" or even lower. The benefits of this higher vacuum in improving quality and capacity are often very substantial.

The steam jet type of vacuum pump has continually gained in favor for high vacuum in industrial process work. The total absence of moving parts is a big advantage and means many years of service, with no maintenance cost. Available in single, two-,three-,four-and five-stage units for vacuum from a few inches up to a small fraction of 1 m.m. Hg. absolute.

Croll-Reynolds have been specializing on this type of equipment for over 30 years, and have made thousands of separate installations. Their engineers have extensive experience in applying it to numerous different processes, and are available for consultation without obligation. Literature is also available on request.

CROLL-REYNOLDS

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Established 1907

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